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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,356	01/23/2004	Won-Jun Lee	9898-314	7097
20575	7590	01/12/2006	EXAMINER	
MARGER JOHNSON & MCCOLLOM, P.C. 210 SW MORRISON STREET, SUITE 400 PORTLAND, OR 97204			ALANKO, ANITA KAREN	
			ART UNIT	PAPER NUMBER
			1765	
DATE MAILED: 01/12/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/763,356

Applicant(s)

LEE ET AL.

Examiner

Anita K. Alanko

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/24/05 election.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 11-41 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-10 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/19/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Election/Restrictions***

Applicant's election without traverse of Group I, species IA-1 and IB-1 in the reply filed on 10/24/05 is acknowledged. The species restriction is withdrawn, and all species are examined. Claims 11-41 are withdrawn from consideration as being directed to a non-elected Group.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (US 6,531,358 B1) in view of Chien (US 5,861,331).

Yu discloses a method comprising:

providing a wafer 10 having a dielectric layer 30 and an electrode 26 partially protruding from a top surface of the dielectric layer (Fig.8);

etching the dielectric layer (since it is removed, Fig.9); and  
prior to etching, reducing the protruding portion of the electrode (Fig.9; col.3, lines 54-60).

Yu fails to disclose how the photoresist is removed.

Chien teaches that it is useful to remove photoresist 308 by a chemical solution (col. 4, lines 8-13). It would have been obvious to one with ordinary skill in the art to remove the photoresist by a chemical solution in the method of Yu because Chien teaches that this is a useful method for removing photoresist layers.

As to claim 2, since the method of modified Yu is the same as the instant invention, it is expected to have the same results of preventing bubbles from adhering to the electrode.

As to claims 3, 5 and 6, Yu discloses to deposit photoresist and etchback until it is at a depth of between about 1000 and 2000 Angstroms from the top surface of the capacitor (col.3, lines 50-53). Likewise, the electrode layer is etched back until it is at a depth of between 1000 and 2000 Angstroms from the top surface of the capacitor (col.5, line 15). Therefore, as to claim 5, the two are substantially level. However, due to processing non-uniformities and etch selectivities, it is expected that the dielectric layer and the photoresist are also either slightly above or below each other, as cited in claims 3 or 6, depending on the type of etchant used (wet or dry etching).

As to claims 7-10, Yu discloses to use dry etching with chlorine (col.3, line 57) or wet etching with a polysilicon etchant (col.3, line 58) to reduce the protrusions.

***Allowable Subject Matter***

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach or suggest a method comprising recessing the top surface at least 500 angstroms below the top surface of the dielectric layer, as in the context of claim 4.

The closest prior art, Yu, teaches to recess a dielectric layer and electrode to approximately the same level. However, since the etch depth is 1000-2000 Angstroms from a top surface of the capacitor, there is no motivation to provide for recessing by 500 angstroms from the top surface of the dielectric layer, as in the context of claim 4.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art is cited to show methods of forming capacitors. Examiner notes that KR 2002-90452A, cited in the IDS, is of interest, however an English translation is not readily available.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 2:30 pm (Wed until 11:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Anita K. Alanko*

Anita K Alanko  
Primary Examiner  
Art Unit 1765